

Preface

Η γνώση των λέξεων οδηγεί στην γνώση των πραγμάτων
(The knowledge of words leads to a knowledge of things)
(Πλάτων, Platon, 427–347 B.C.)

The glamour and excitement of genetic engineering during the past three decades have given way to routine and almost trivial daily work in the laboratory. Many of the young researchers are nevertheless still fascinated by the precision of the various gene technologies and the surprising possibilities they offer, and even seasoned researchers are enchanted by this ever-growing field of molecular genetics. It is fair to say that gene technology has now infiltrated all areas of molecular biology, and massively contributed to the vast information in this field, that is accumulating at a more explosive rate than ever before. This phenomenal development forces to divide the field of gene technology into at least three subsections: **genomics**, **transcriptomics**, and **proteomics**, and this is exactly done in the present opus.

*"This book contains a considerable volume of informations.
I deeply regret this, but unfortunately it was inevitable."
(Samuel Langhorne Clemens alias Mark Twain, 1835–1910)*

With the immense growth of the three, and other related areas of molecular biology, the number of novel technologies, procedures and technical terms is soaring. So, the present three volumes contain a total of 12,000 different terms, many of them describing recent developments and brand-new technologies. It is therefore the most comprehensive collection of descriptions of molecular processes and techniques worldwide. Some of the terms and their multiple variants dominate. For example, traditional PCR and its numerous facets comprises some 190 entries, surpassed by the terminology around microarray with more than 250 entries, and well over 100 "omics" neologisms mess up both literature and daily language. The second ("next"), and emerging third ("next-next") generation sequencing technologies brought a burst in novel terminology, not to speak of the many other cutting-edge techniques that appear almost daily.

*"Make everything as simple as possible, but not simpler!"
Albert Einstein (1879–1955)*

This flood of terms and acronyms sometimes leaves the researcher a bit helpless, especially since a single term might mean different things, and many different terms may mean the same single thing. The present volumes aim at ordering this chaos a bit, and are not restricted to the omics trilogy (or even gene technology), but link to other related disciplines and describe relevant terms, if considered to be necessary or helpful for a

better understanding. Obviously, the growing number of proteins cannot be treated with in such a dictionary, especially since the peptides, proteins, and their isoforms will probably be in their millions. Therefore only a limited selection is portrayed. Another problem was, is, and will be, the extent of description. Some entries are described in some depth, some others only defined spartanically.

"Going too far is as bad as not going far enough"

过犹不及

(Chinese proverb)

My prime appreciations go to my son Uwe Kahl, who took the tantalizing task to draw a multitude of figures and schemes from partly fragmented and absolutely insufficient samples. He did a great job! I also thank Achim Wilz for his patient introduction into the various facets and pitfalls of the computer world. Sigrid – as always – gave me all her support and the freedom needed for such a work.

These three books are dedicated to all people of GenXPro GmbH in the Frankfurt Innovation Center Biotechnology (FIZ, Frankfurt am Main, Germany). Since excellent science is nowadays also daily work in companies, I learned a lot and hopefully could give a tiny bit to the energetic people of this dynamic enterprise. I am in fact grateful for all the discussions, scientific turns and innovations, and all the adventures that accompany a young spin-off company: a very rewarding experience.

I appreciate the hospitality of various institutions in different countries, where I have been working on this opus over the last years, as there is The Research Institute for Bioresources (Kurashiki, Japan), the Department of Biology and Molecular Biology (University of California at Los Angeles, USA), the International Center for Agricultural Research in the Dry Areas (Aleppo, Syria), the Centro Agronomico Tropical (Turrialba, Costa Rica), the Iwate Biotechnology Research Institute (Kitakami, Japan), and the Pharma Center (University of Vienna, Austria).

Frankfurt am Main, September 2008

Günter Kahl